

02/1/02

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of : Georges CRONIMUS
Serial no. :
For : CLOSING DEVICE FOR VALVE WITH
INTERIOR HOUSING FOR PROBE ALLOWING
PROBE TO BE REMOVED WITHOUT
DISASSEMBLY
Docket : METPAT P59AUS

The Commissioner of Patents and Trademarks
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Dear Sir:

By way of preliminary amendment, please amend the above identified application as set forth below.

In the Specification:

Please cancel paragraphs 2, 5, 8, 25 and 30 of the specification, in their entirety, in favor of a clean form of paragraphs 2, 5, 8, 25 and 30 of the specification, without any markings thereon, as follows. Accompanying this response is a copy of the original paragraphs of the specification which show the addition(s) (by underlining, shading and bold) and the deletion(s) (by strikeout) to the canceled specification paragraphs. Please enter the replacement specification paragraphs into the record of this case.

In the Claims:

Please cancel claims 1-19, without prejudice or disclaimer of the subject matter therein, in favor of new claims 20-38 as follows.

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[002] FIELD OF THE INVENTION

[005] BACKGROUND OF THE INVENTION

[008] SUMMARY OF THE INVENTION

[025] BRIEF DESCRIPTION OF THE DRAWINGS

[030] DETAILED DESCRIPTION OF THE INVENTION

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20. (NEW) A closing device for a valve (14), specifically a drainage valve, for a container, said closing device (16) moving between a position that opens the valve and a position that closes the valve (14), and comprising an interior housing (30) designed to hold a probe or a detector (27) of a measurement or detection apparatus, wherein the closing device (16) has an opening (38) located in a portion of the closing device that is accessible when the device is in the operating position inside the valve, offering access to its interior housing and allowing the probe or the detector (27) to be inserted or removed without any need to previously disassemble the valve or the closing device, and without altering the valve seal.

21. (NEW) The closing device according to claim 20, wherein the valve (14) is a flap valve.

22. (NEW) The closing device according to claim 20, wherein the valve (14) is a drainage valve.

23. (NEW) The closing device according to claim 20, wherein the valve (14) comprises a shaft (17) and a blocking head (18).

24. (NEW) The closing device according to claim 20, wherein the valve (14) is displaced between open and closed positions by the movement of a piston (21) controlled by an activator (23).

25. (NEW) The closing device according to claim 24, wherein a shaft (17) and a shaft of the piston (21) of the activator (23) are connected by means of a coupling element (24).

26. (NEW) The closing device according to claim 25, wherein the coupling (24) has a generally cylindrical lower portion (25) which extends into a generally conical upper portion (26).

27. (NEW) The closing device according to claim 25, wherein the opening (38) offering access to the interior housing (30) is formed near the coupling (24).

28. (NEW) The closing device according to claim 20, wherein the opening (38) may be temporarily blocked when not in use.

29. (NEW) The closing device according to claim 28, wherein the opening (38) is temporarily blocked by a door (39).

30. (NEW) The closing device according to claim 29, wherein a connector block (31) is connected to the lateral door (39).

31. (NEW) The closing device according to claim 20, wherein the housing (30) comprises a support element (36) capable of maintaining the probe (28) in position for measurement or detection.

32. (NEW) The closing device according to claim 31, wherein the support element is a groove (36) formed in the lateral wall of the interior housing (30).

33. (NEW) The closing device according to claim 20, wherein the probe (27) is a contact type temperature measurement probe.

34. (NEW) The closing device according to claim 20, wherein the probe (27) comprises a sensor element (28) and conductive wires (29) and in that the sensor element (28) is located inside the blocking head (18) and the conductive wires (29) pass through the shaft (17) of the closing element (16) when the probe is positioned inside the housing (30).

35. (NEW) The closing device according to claim 34, wherein the sensor or detector element (28) is located against the internal surface of the upper wall (32) of the blocking head (18) of the closing device (16) when the probe or the detector (27) is positioned inside the housing (30).

36. (NEW) The closing device according to claim 34, wherein the sensor or detector element (28) extends through a flexible casing (33), with the wires (29) passing through an interior thereof, said casing consisting of a coil of compressible spirals (34).

37. (NEW) The closing device according to claim 36, wherein the casing (33) terminates in a contact ring (35).

38. (NEW) The closing device according to claim 32, wherein the contact ring (35) and the groove (36) cooperate to maintain the probe or the detector (27) inside the housing (30) and to ensure that the sensor or detector element (28) remains pressed against the upper wall (32) of the blocking head (18) of the closing device by elastic compression of the spirals (34) on the casing (33).

REMARKS

Accompanying this response, please find marked-up paragraphs of the specification which overcome some informalities noted in the specification. The undersigned avers that the enclosed replacement paragraph(s) of the specification do not contain any new matter.

Please consider new claims 20-38 upon consideration of this application.

In the event that there are any fee deficiencies or additional fees are payable, please charge the same or credit any overpayment to our Deposit Account (Account No. 04-0213).

Respectfully submitted,



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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service, with sufficient postage, as First Class Mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231 on February 1, 2002.

By: _____

Print Name: Michael J. Bujold

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[001] CLOSING DEVICE FOR VALVE WITH INTERIOR HOUSING FOR PROBE
ALLOWING PROBE TO BE REMOVED WITHOUT DISASSEMBLY

[002] **FIELD OF THE INVENTION**

[003] The present invention concerns a device for closing a valve comprising an interior housing with an access opening for inserting or removing the probe of a measurement or detection apparatus, for example, a temperature measurement probe, without the need of disassembling either the closing device or the valve, while permitting the valve to remain closed.

[004] Although not limited in scope to such use, the closing device of the invention is preferably intended for a drainage valve of a reactor, a storage vat, a column, or other container.

[005] **BACKGROUND OF THE INVENTION**

[006] In order to control a chemical reaction, it is often essential to measure the temperature of the reactive environment inside the reactor. Not only does this information make it possible to retroactively adjust the means for heating or cooling the reactor to attain or maintain the desired temperature, but it also ensures that the chemical reaction is proceeding properly. In practice, a sharp rise in temperature often signifies that the reaction has gone awry, and quick detection of such a situation may be critical for the safety of employees, equipment, and the environment.

[007] For this reason, reactors or other chemical containers are often equipped with a device for measuring the temperature of their contents.

[008] **SUMMARY OF THE INVENTION**

[009] In order to avoid problems with seals, construction and cost in conventional temperature measurement systems that use a penetrating probe surrounded by a thermometric casing placed in a supplemental tube in the reactor, the prior art has proposed a more satisfactory measurement device using a contact measurement probe.

[010] With this device the temperature probe is maintained in contact with a locally thinned area of the reactor wall and it measures content temperature through the

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[023] The device of the invention is, therefore, especially advantageous because it saves valuable time but still uses a conventional temperature measuring contact probe located within the closing mechanism of the drainage valve.

[024] The closing device of the invention is easily manufactured and scarcely more expensive than prior art closing devices. It can be attached to any type of valve, either a drainage valve or some other type, and used on any type of reactor, columns, storage vats, containers or the like. Furthermore, most types of existing measurement or detection contact probes may be easily adapted to it.

[025] **BRIEF DESCRIPTION OF THE DRAWINGS**

[026] Other characteristics and features of the invention will be apparent from the following detailed description, with reference to the attached drawings, in which:

[027] Figure 1 is a longitudinal cross-section of the chemical reactor system with a drainage valve equipped with the closing device of the invention;

[028] Figure 2 is an enlarged longitudinal cross-section of the lower portion of the reactor of Figure 1, with a more detailed illustration of the drainage valve and its movable closing device surrounding a temperature measurement probe that can be extracted without disassembling the valve of the invention;

[029] Figures 3 through 6 are schematic perspective views of the lower portion of the closing device of the invention showing the various stages during extracting the measurement probe without disassembling the valve: the lateral access door on the closing device is closed in Figure 3, the lateral access door is open and the probe is in operating position inside the housing of the closing device in Figure 4, and the probe is partially and then completely extracted from the closing device in Figures 5 and 6.

[030] **DETAILED DESCRIPTION OF THE INVENTION**

[031] The closing device of the present invention will now be described in detail with reference to Figures 1 through 6 showing a preferred embodiment of the invention. Equivalent elements in different drawings will bear the same reference numerals.